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USDA-ARS-OFFICE OF TECHNOLOGY TRANSFER			KIM, PAUL	
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800 BUCHANAN ST				
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SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/13/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/734,366	LAZO ET AL.	
	Examiner	Art Unit	
	Paul Kim	2161	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 13 December 2006.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-16, 18-24 and 26-28 is/are pending in the application.
- 4a). Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-16, 18-24, and 26-28 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date: _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

1. This Office action is responsive to the following communication: Amendment filed on 13 December 2006.
2. Claims 1-28 are pending and present for examination. Claims 1, 5, 9, 16, and 24 are independent.

Response to Amendment

3. Claims 17 and 25 have been cancelled.
4. Claims 1, 4, 9, 16, and 18-20 have been amended.
5. No claims have been added.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. **Claims 1-8, 16-17, and 24** are rejected under 35 U.S.C. 102(e) as being anticipated by Imaichi et al (U.S. Patent 7,047,255, hereinafter referred to as IMAICHI), filed on 27 February 2003, and issued on 16 May 2006.

8. **As per independent claims 1 and 5, IMAICHI teaches:**

A method of displaying data from a relational database comprising the steps of

- a. Providing at least two libraries of data from different sources {See IMAICHI, col. 4, lines 11-18, wherein this reads over "there are provided two document groups"};

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- b. Identifying clusters of related data by comparing the data of each library {See IMAICHI, col. 4, lines 29-35, wherein this reads over "documents or words having high relevance degree, in terms of the axis direction subject to clustering, are adjacently plotted in clusters"};
- c. Providing a multi-dimensional display comprising a circular figure {See IMAICHI, Figures 3-4, 8-10, and 12-15; and col. 4, lines 29-35, wherein this reads over "the elements of either or both of the vertical and horizontal axes are subjected to clustering for rearrangement and the results are displayed in the two-dimensional coordinate system"} having loci distributed about the periphery thereof wherein each locus is identified with one data library; and
- d. Plotting a symbol for each cluster within the multidimensional figure based on a set of coordinates within said multi-dimensional display, wherein said coordinates are a function of a specific comparative analysis applied to said data libraries which contributed data to said cluster {See IMAICHI, col. 4, lines 9-21, wherein this reads over "[b]y displaying the relationship between the documents in the two-dimensional coordinate system, it is possible to grasp at a glance the characteristics of the document groups such as the relationship between document groups as a whole or between individual documents"}.

9. **As per dependent claims 2 and 6, IMAICHI teaches:**

The method of claim 1, wherein the comparative analysis includes the number of said data libraries which contribute data to said cluster {See IMAICHI, col. 6, lines 1-8, wherein this reads over "wherein T is the total number of documents"}.

10. **As per dependent claim 3 and 7, IMAICHI teaches:**

The method of claim 1, wherein the comparative analysis includes the amount of data from each library which contributes to said cluster {See IMAICHI, col. 6, lines 1-22, wherein this reads over "df(t) is the number of documents which contain the word (t)" and ""/>.

11. **As per dependent claim 4 and 8, IMAICHI teaches:**

The method of claim 1, wherein the comparative analysis includes the percentage of data from each library that contributes to said cluster {See col. 8, lines 35-38, wherein this reads over "the relevance degree calculation unit calculates the relevance degree between the words and documents"}.

12. **As per independent claim 16, IMAICHI teaches:**

A computer program for conducting a search for and plotting of alphanumeric data, the computer program being stored on a computer readable medium or transmitted by a propagated signal and comprising:

- a. A receiving code segment that causes the computer to receive input including one or more search criteria {See IMAICHI, col. 2, lines 59-60, wherein this reads over "a step for receiving a search request on a document database" for at least one searchable alphanumeric character in a data library containing alphanumeric characters {See IMAICHI, Figure 6; and col. 8, lines 11-16, wherein this reads over "a search request input unit for inputting search keywords"}, wherein the at least one searchable alphanumeric characters correspond to at least one contig {See IMAICHI, col. 2, lines 59-60, wherein this reads over "a step for receiving a search request on a document database"; and col. 8, lines 26-28, wherein this reads over "as a result a document group is obtained"};}

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- b. An assigning code segment that causes the computer to assign a value to each alphanumeric character {See IMAICHI, col. 7, lines 40-43, wherein this reads over "[w]hen each line of the table in FIG. 2 is regarded as a vector, each element of Document Unit A can be expressed as a weighting vector for each element of Document B"} corresponding to at least one contig; and
- c. A plotting code segment that causes the computer to plot the input on a visual display comprising a circular figure, said plot relating to said value assigned to the alphanumeric character {See IMAICHI, col. 8, lines 38-42, wherein this reads over "[t]he client visualizes the relevance between the word group and the document group in the two-dimensional coordinate system on the display unit"} corresponding to at least one contig.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. **Claims 9-15, 18-23, and 24-28** are rejected under 35 U.S.C. 103(a) as being unpatentable over IMAICHI, in view of Karchi et al (USPGPUB 2004/0121360, hereinafter referred to as KARCHI), filed on 31 March 2002, and published on 24 June 2004.

IMAICHI teaches the limitations of Claims 1-8, 16-17, and 25 for the reasons stated above.

IMAICHI differs from the claimed invention in that IMACHI fails to disclose ESTs, EST libraries, and contigs (claims 9-15, 17-23, and 26-28).

15. **As per independent claim 9, IMAICHI, in combination with KARCHI, discloses:**

A method for displaying data from a relational database of EST libraries comprising the steps of

- a. providing a plurality of EST libraries {See KARCHI, Para. 0160, wherein this reads over "458 available EST libraries"};
- b. identifying contigs by comparing the ESTs of said plurality of EST libraries {See KARCHI, Para. 0148, wherein this reads over "data from EST databases containing approximately 125,000 ESTs from 48 libraries" and "Transcribed nucleic acid sequences were computationally clustered nad assembled to create contigs"};

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- c. providing a multi-dimensional display comprising a circular figure {See IMAICHI, Figures 3-4, 8-10, and 12-15; and col. 4, lines 29-35, wherein this reads over "the elements of either or both of the vertical and horizontal axes are subjected to clustering for rearrangement and the results are displayed in the two-dimensional coordinate system"} having loci distributed about the periphery thereof, wherein each locus is associated with one of said libraries {See IMAICHI, col. 4, lines 29-35, wherein this reads over "documents or words having high relevance degree, in terms of the axis direction subject to clustering, are adjacently plotted in clusters"};
- d. plotting a symbol for each contig within the multidimensional display based on a set of coordinates within said multi-dimensional display, wherein each symbol is disposed within the figure at a point within an area between the loci associated with the libraries which contributed to said contig {See IMAICHI, col. 9-21, wherein this reads over "[b]y displaying the relationship between the documents in the two-dimensional coordinate system, it is possible to grasp at a glance the characteristics of the document groups such as the relationship between document groups as a whole or between individual documents"}.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above invention suggested by IMAICHI by combining it with the invention disclosed by KARCHI. The results of this combination would lead to a method of identifying contigs by comparing ESTs and plotting contig data on a multi-dimensional display.

One of ordinary skill in the art would have been motivated to do this modification so that an overall visual representation of data (specifically, ESTs and contigs) may be presented by plotting data which have been gathered and clustered by common attributes.

16. As per dependent claims 10, 18, and 26, IMAICHI, in combination with KARCHI, discloses:

The method of claim 9, wherein said coordinates are determined as a function {See IMAICHI, col. 5, lines 41-45, wherein this reads over "these can be elements to be plotted on the vertical axis or horizontal axis of the two-dimensional coordinate system"} of the number of said libraries {See IMAICHI, col. 9-21, wherein this reads over "[b]y displaying the relationship between the documents in the two-dimensional coordinate system, it is possible to grasp at a glance the characteristics of the document groups such as the relationship between document groups as a whole or between individual documents"} which contributed ESTs to said contig {See KARCHI, Para. 0148, wherein this reads over "data from EST databases containing approximately 125,000 ESTs from 48 libraries" and "Transcribed nucleic acid sequences were computationally clustered nad assembled to create contigs"}.

17. As per dependent claim 11, 19, and 27, IMAICHI, in combination with KARCHI, discloses:

The method of claim 9, wherein said coordinates are determined as a function {See IMAICHI, col. 5, lines 41-45, wherein this reads over "these can be elements to be plotted on the vertical axis or horizontal axis of the two-dimensional coordinate system"} of the proportion {See IMAICHI, col. 6, lines 1-22, wherein this reads over "df(t) is the number of documents which contain the word (t)" and "} of ESTs in said contig contributed by each of said libraries {See KARCHI, Para. 0148, wherein this reads over "data from EST databases containing approximately 125,000 ESTs from 48 libraries" and "Transcribed nucleic acid sequences were computationally clustered nad assembled to create contigs"}.

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18. **As per dependent claim 12, 20 and 28, IMAICHI, in combination with KARCHI, discloses:**

The method of claim 9, wherein said coordinates are determined as a function {See IMAICHI, col. 5, lines 41-45, wherein this reads over "these can be elements to be plotted on the vertical axis or horizontal axis of the two-dimensional coordinate system"} of the number {See IMAICHI, col. 6, lines 1-22, wherein this reads over "df(t) is the number of documents which contain the word (t)" and "} of ESTs in said contig from a given library relative to the total number of ESTs in said library {See KARCHI, Para. 0148, wherein this reads over "data from EST databases containing approximately 125,000 ESTs from 48 libraries" and "Transcribed nucleic acid sequences were computationally clustered and assembled to create contigs"}.

19. **As per dependent claim 13, IMAICHI, in combination with KARCHI, discloses:**

The method of claim 9, and further comprising selecting a subset of said libraries {See KARCHI, Para. 0160, wherein this reads over "[o]ut of 458 available EST libraries, 48 containing >50 ESTs were selected"} distributed about the periphery of said multi-dimensional display and repeating steps (b) through (d).

20. **As per dependent claim 14, IMAICHI, in combination with KARCHI, discloses:**

The method of claim 9, and further comprising rearranging said libraries {See IMAICHI, Figures 3-4, 8-10, and 12-15; and col. 4, lines 29-35, wherein this reads over "the elements of either or both of the vertical and horizontal axes are subjected to clustering for rearrangement and the results are displayed in the two-dimensional coordinate system"} distributed about the periphery of said multi-dimensional display and repeating steps (b) through (d).

21. **As per dependent claim 15, IMAICHI, in combination with KARCHI, discloses:**

The method of claim 9, wherein said libraries are selected from one or more libraries based on species, cultivar, tissue, developmental stage, or stress condition {See KARCHI, Para. 0038, wherein this reads over "the type of tissues from which the transcribed nucleic acid sequences were derived" and "the number of clusters of said transcribed nucleic acid sequences generated by the library from which said contigs are derived"}.

22. **As per dependent claims 21-23, IMAICHI, in combination with KARCHI, discloses:**

The computer program of claim 18 (also 19 and 20) wherein the plotting code segment plots {See IMAICHI, col. 8, lines 38-42, wherein this reads over "[t]he client visualizes the relevance between the word group and the document group in the two-dimensional coordinate system on the display unit"} a plurality of contigs on a visual display thus enabling a computer user to see relationships between and among said plotted contigs {See KARCHI, Figures 3 and 4}.

23. **As per independent claim 24, IMAICHI teaches:**

A system for plotting and manipulating data points, the system comprising:

- a. A computer program stored on computer readable medium, said program capable of searching, retrieving, {See IMAICHI, col. 2, lines 59-60, wherein this reads over "a step for receiving a search request on a document database"; col. 8, lines 38-42, wherein this reads over "[t]he client visualizes the relevance between the word group and the document group in the two-dimensional coordinate system on the display unit"} and plotting contigs assembled from libraries containing EST data represented in alphanumeric form {See KARCHI, Para.

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0003, wherein this reads over "a method and system for efficiently detecting a group of a relatively small number of documents having the same or similar keyword (hereinafter referred to as an outlier cluster"; and Para. 0148, wherein this reads over "data from EST databases containing approximately 125,000 ESTs from 48 libraries" and "Transcribed nucleic acid sequences were computationally clustered and assembled to create contigs"};

- b. Computer means capable of operating said computer program;
- c. Graphical display means, capable of displaying said data as a multi-dimensional display comprising a circular figure using a plurality of colors.

It is inherent that a system would comprise a computer means capable of operating a computer program. Without said operational capabilities, the system would not be able to search, retrieve, and plot the requested data.

Additionally, it is inherent that the graphical display means use a plurality of colors. Without the use of a plurality of colors, displaying plotted data would not be capable since the display would be presented in only one color.

Response to Arguments

24. Applicant's arguments filed 13 December 2006 have been fully considered but they are not persuasive.

a. **Applicant's Arguments:**

i. Claims Rejections under 35 U.S.C. 102

Applicant asserts the argument that Imachi is silent and fails to disclose "a multidimensional display comprising a figure having loci distributed about the periphery thereof" and "plotting a symbol for each cluster within the multidimensional figure based on a set of coordinates within said multi-dimensional display" (See Amendment, pages 8-9).

ii. Claims Rejections under 35 U.S.C. 103

Applicant asserts the argument that there is no suggestion or motivation to modify the reference teachings (See Amendment, page 10).

Applicant asserts the argument that the cited reference does not provide a reasonable expectation of success (See Amendment, page 11).

Applicant asserts the argument that the reference fails to teach all of the claimed elements (See Amendment, page 11).

b. **Response to Arguments:**

i. Claims Rejections under 35 U.S.C. 102

As per Applicant's assertion that Imachi is silent and fails to disclose "a multidimensional display comprising a figure having loci distributed about the periphery thereof" and "plotting a symbol for each cluster within the multidimensional figure based on a set of coordinates within said multi-dimensional display," the Examiner disagrees.

Applicant is directed to column 4, lines 11-21 of Imachi which discloses the following:

"When there are provided two document groups (document groups A and B), document groups A and B are plotted on one axis and the other axis, respectively, and the relevance degree between a document i of document group A and a document j of the document group B is indicated at a coordinate (i, j) with an indication type according to the relevance degree. By displaying the relationship between the documents in the two-dimensional coordinate system, it is possible to grasp at a glance the characteristics of the document groups such as the relationship between document groups as a whole or between individual documents."

Applicant is further directed to Figures 3-4, 8-10, and 12-15 of Imachi which disclose display examples of clustering in a two-dimensional coordinate system. Wherein elements of a document are clustered on a two-dimensional coordinate system, it is unclear to the Examiner, how the resulting cluster would not be considered "a multidimensional figure based on a set of coordinates." One of ordinary skill in the art would clearly understand that a plotting of elements on a two-dimensional display to create clusters would read upon Applicant's claimed invention.

Additionally, in response to applicant's arguments against the references individually (i.e. See Amendment, page 9, "Imachi is also completely silent with respect to disclosure of 'contigs' and 'EST data'"), one cannot show nonobviousness by attacking

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references individually where the rejections are based on combinations of references.

See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). While it may not be surprising to the Applicant that Imachi is "completely silent with respect to disclosure of 'contigs' and 'EST data,'" the Examiner notes that Imachi, in combination with Karchi, appropriately and fully discloses Applicant's invention as claimed.

For the aforementioned reasons above, the claims rejections under 35 U.S.C. 102(e) are sustained and deemed proper.

ii. Claims Rejections under 35 U.S.C. 103

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Applicant is directed to the motivation provided in the earlier Office action dated 13 June 2006. That is, "one of ordinary skill in the art would have been motivated to do this modification so that an overall visual representation of data (specifically, ESTs and contigs) may be presented by plotting data which have been gathered and clustered by common attributes."

In response to applicant's argument that Karchi is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention.

See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Karchi discloses the use of EST databases and contigs in identifying inter-contig regions.

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Accordingly, wherein Imachi and Karchi both provided method for visualizing relationships between and among data, the cited prior art would be analogous art.

As per Applicant's assertion that the cited reference does not provide a reasonable expectation of success, since the cited prior art are deemed analogous art, Applicant's argument is deemed moot.

As per Applicant's assertion that the reference fails to teach all of the claimed elements, Applicant has not asserted any specific prior art arguments in response to the rejections of the claims but has applied a piecemeal analysis of the disclose prior art. Therefore, by virtue of dependency, the rejections of the claims under 35 U.S.C. 103 are sustained for the reasons stated above in relation to the rejections of claims under 35 U.S.C. 102.

Conclusion

25. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

26. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul Kim whose telephone number is (571) 272-2737. The examiner can normally be reached on M-F, 9am - 5pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Apu Mofiz can be reached on (571) 272-4080. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Paul Kim
Patent Examiner, Art Unit 2161
TECH Center 2100

APM/Mofiz
APM Mofiz
SPE1 TC2100